

Anjuman Islam Janjira Degree College of Science, Murud Janjira
Academic Calender 2023-24

F.Y.B.SC Computer Science Sem I
Digital Systems & Architecture (USCS101)

Date	Topic
06-07-2023	Unit I
08-07-2023	Fundamentals of digital logic: Boolean algebra, logic gates
08-07-2023	Simplification of logic circuits:Algebraic Simplification karnaugh maps
13-07-2023	Combinational circuits;Adders, mux, De-mux
15-07-2023	Sequential Circuits:Flip-flops,Counters
15-07-2023	Computer system: Comparison of computer organization & architecture.
20-07-2023	Computer components and functions , Interconnection structures, Bus interconnections
22-07-2023	Input/output: I/O module, programmed I/O,interrupt driven I/O, direct memory access.
	Unit II
22-07-2023	Memory System Organization: classification&design parameters
27-07-2023	memory hierarchy, Internal memory
03-08-2023	interleaved and associative memory
05-08-2023	cache memory: design principles
05-08-2023	memory mappings, eplacement algorithms
10-08-2023	cache performance,cache coherence,virtual memory
12-08-2023	External memory:magnetic discs,optical memory,flash memory, RAID levels
12-08-2023	Processor organization:Instruction formats,instruction sets
17-08-2023	Addressing modes,processor organization, structures & functions
19-08-2023	register org,basic microprocessor operations: data transfer
19-08-2023	arithmetic & logical operations
24-08-2023	instruction cycle and instruction pipeline
26-08-2023	RISC & CISC Architecture
26-08-2023	instruction level parallism
31-08-2023	superscalar processors,design issues
02-09-2023	Unit III-Control unit
02-09-2023	micro operations
09-09-2023	functional requirements
09-09-2023	processor control
14-09-2023	hardwired implementation
16-09-2023	micro programmed control
16-09-2023	parallel architecture
21-09-2023	classification of parallel system
23-09-2023	flynn's taxonomy
23-09-2023	array processor
28-09-2023	clusters
30-09-2023	numa computers
30-09-2023	multi processor system
05-10-2023	structure & interconnection networks
07-10-2023	multi core computers
07-10-2023	introduction ,organization and performance

F.Y.B.SC Computer Science Sem I
Introduction To Programming With Python (USCS102)

Date	Syllabus topic
03-07-2023	Unit I
04-07-2023	Chapter I: Overview of Python: History & Versions, Features of Python, Execution of a Python Program
06-07-2023	Flavours of Python, Innards of Python, Python Interpreter
10-07-2023	Memory Management in Python, Garbage Collection in Python, Comparison of Python with C and Java,
11-07-2023	Installing Python, Writing and Executing First Python Program, Getting Help, IDLE
13-07-2023	Chapter II: Data Types, Variables and Other Basic Elements: Comments, Docstrings, Data types- Numeric Data type
17-07-2023	Compound Data Type, Boolean Data type, Dictionary
18-07-2023	Sets, Mapping, Basic Elements of Python, Variables
20-07-2023	Chapter III: Input and Output Operations: Input Function, Output Statements, The print() function
24-07-2023	The print(“string”) function, The print(variables list) function
25-07-2023	The print(object) function, The print(formatted string) function, Command Line Arguments
27-07-2023	Chapter IV: Control Statements: The if statement, The if ... else Statement, The ‘if ... elif ... else’ Statement
31-07-2023	Loop Statement- while loop, for loop, Infinite loop, Nested loop
01-08-2023	The else suite, break statement, continue statement
03-08-2023	pass statement, assert statement, return statement
07-08-2023	Operators: Arithmetic operators, Assignment operators, Unary minus operator
08-08-2023	Relational operators, Logical operators, Bitwise operators
10-08-2023	Membership operators, Identity operators
14-08-2023	Precedence of Operators, Associativity of Operators
21-08-2023	Arrays: Creating Arrays, Indexing and Slicing of Arrays, Basic Array Operations
22-08-2023	Arrays Processing, Mathematical Operations on Array, Aliasing Arrays
24-08-2023	Slicing and Indexing in NumPy Arrays, Basic slicing, Advanced Indexing
28-08-2023	Dimensions of Arrays, Attributes of an Array, The ndim Attribute
29-08-2023	The shape Attribute, The size Attribute, The itemsize Attribute
31-08-2023	Functions: Function definition and call, Returning Results, Returning Multiple Values from a Function, Built-in Functions
04-09-2023	Difference between a Function and a Method, Pass Value by Object Reference,
05-09-2023	Parameters and Arguments, Formal and Actual Arguments ,Positional Arguments, Keyword Arguments
07-09-2023	Default Arguments, Arbitrary Arguments, Recursive Functions
11-09-2023	Anonymous or Lambda Functions, Using Lambda with the filter() Function
12-09-2023	Using Lambda with the map() Function, Using Lambda with the reduce() Function
14-09-2023	Modules: Introduction to Modules in Python
18-09-2023	Strings: Creating Strings, Functions of Strings, Working with Strings, Length of a String

19-09-2023	Indexing and Slicing, Repeating and Concatenating Strings, Checking Membership, Comparing Strings
21-09-2023	Removing Spaces, Finding Substrings, Counting Substrings, Immutability, Splitting and Joining Strings
25-09-2023	Changing Case, Checking Starting and Ending of a String, Sorting Strings, Searching in the Strings
26-09-2023	Testing Methods, Formatting Strings, Finding the Number of Characters and Words, Inserting Substrings into a String
28-09-2023	List and Tuples: Lists, List Functions and Methods, List Operations
03-10-2023	List Slices, Nested Lists, Tuples, Functions in Tuple
05-10-2023	Dictionaries: Creating a Dictionary, Operators in Dictionary, Dictionary Methods, Using for Loop with Dictionaries
09-10-2023	Operations on Dictionaries, Converting Lists into Dictionary,
10-10-2023	Converting Strings into Dictionary, Passing Dictionaries to Functions,
12-10-2023	Sorting the Elements of a Dictionary using Lambda, Ordered Dictionaries

**F.Y.B.SC Computer Science Sem I
Linux Operating System**

Date	Syllabus topic(theory)
19-06-2023	Unit I Linux operating system and Basics : History, GNU Info and Utilities,
22-06-2023	GNU Info and Utilities,
23-06-2023	Various Linux Distributions,
26-06-2023	The Unix/Linux architecture,
29-06-2023	Features of Unix/Linux,
30-06-2023	Starting the shell, Shell prompt,
03-07-2023	Command structure, File Systems and Directory Structure,
06-07-2023	man pages, more documentation pages Basic Bash shell commands:
07-07-2023	General purpose utility Commands, basic commands,
10-07-2023	Various file types, attributes and File handling Commands, Handling Ordinary Files.
13-07-2023	More file attributes Advanced Bash shell commands:Simple Filters,
14-07-2023	Filters using regular expressions.
17-07-2023	The Linux environment variable: Setting, Locating and removing environment variables like PATH etc,
7-20-23	Default shell environment variables, Using command aliases.
7-21-23	(Unit II) Understanding Linux file permission
7-24-23	Linux security, Using Linux groups,
7-27-23	Decoding file permissions, Changing security setting, Sharing files.
7-28-23	Linux Security: Understanding Linux Security, uses of root,
7-31-23	sudo command, working with passwords, Understanding ssh.
	Unit II Chapter 3
8-3-23	Networking: TCP/IP Basics, TCP/IP Model,
8-4-23	Resolving IP addresses, Applications, ping, telnet, ftp, DNS
	Chapter 4
8-7-23	Working withEditors: awk, sed and Introduction to vi

Unit III	
8-10-23	Chapter 1 Basic script building: Using multiple commands, Creating script files, Displaying messages
8-11-23	Using variables, Redirecting Input and Output, Pipes performing math, Exiting the scrip
8-14-23	Chapter 2 Using structured commands: Working with if-then, if-then-else and nested if statements, test command,
17-08-2023	Compound condition testing, while command, until command, case command.
18-08-2023	Chapter 3 Script and Process control : Handling signals, Running scripts in background mode, Running scripts without a console
21-08-2023	Job control, Job scheduling commands: ps, nice, renice, at, batch, cron table, Running the script at boot

F.Y.B.SC Computer Science Sem I
Open source technologies

Date	Syllabus topic(theory)
Unit I	
16-06-2023	Introduction to open source
17-06-2023	Advantages of oss Disadv of oss
19-06-2022	Free software
21-06-2023	Free software vs open source software Free software foundation
22-06-2023	Public domain software Software freedom
26-06-2023	Licence Apache
28/06/2022	GPI
03-07-2023	mozilla
05-07-2023	Copyright copyleft Patent
06-07-2023	Income generation opportunities
10-07-2023	Closed source software Open source software Shared source
12-07-2023	Free doesn't mean no cost Internationalization
Unit II	
13-07-2023	Case studies Intro apache web server Features of http
17-07-2023	GNu linux Features of linux
19-07-2023	Android Mozilla
20-07-2023	wikipedia

24-07-2023	Drupal Wordpress
26-07-2023	GNU compiler GNU debugger
27-07-2023	Github openoffice
31-07-2023	Unit III Open source software development Open source design
02-08-2023	Open source hardware Open source teaching
03-08-2023	Open source media Communication and etiquettes
07-08-2023	Intro open solaris Containerization technology
09-08-2023	Virtualization
10-08-2023	Docker development tools

F.Y.B.SC Computer Science Sem I
Discrete Mathematics(USCS105)

Date	Syllabus topic
07-04-2023	(Unit I)
	Chapter I: Defining function, domain, co-domain & range of function , direct & inverse images
07-05-2023	Injective, Surjective, Bijective functions, composite & inverse functions
07-08-2023	Chapter II: Definition examples & properties of relations
07-11-2023	partial ordering sets
07-12-2023	Linear ordering hasse diagrams, maximum and minimum elements,lattices.
15/7/23	Chapter III: Definition of recurrence relations
18/7/23	formulating recurrence relations
19/7/23	Solving recurrence relation , back tracking method
22/7/23	Linear homogenous recurrence relations with constant coefficients
25/7/23	Solving linear homogenous recurrence relation with constant coefficients of degree two when characteristic equation has distinct roots & only one root
26/7/23	Particular solutions of non-linear homogenous recurrence relation
29/7/23	Solution of recurrence relation by the method of generation functions
08-01-2023	Application- Formulate and solve recurrence relation for Fibonacci numbers
08-02-2023	Tower of Hanoi, Intersection of lines in a plane
08-05-2023	Sorting algorithms.
	(Unit II)
08-08-2023	Chapter IV: Partition and distribution of objects
08-09-2023	Permutation with distinct & indistinct objects, Binomial numbers
08-12-2023	Combination with identities: Pascal Identity, Vandermonde's Identity
15/8/23	Pascal triangle, Binomial theorem
16/8/23	Combination with indistinct objects
19/8/23	Chapter V: Counting Principles
22/8/23	Sum and product rules , Two way counting
23/8/23	Tree diagram for solving counting problems
26/8/23	Pigeon hole principle, simple examples
29/8/23	Inclusion & Exclusion principle

30/8/23	Chapter VI: Languages , Grammars & Machines
09-02-2023	Introduction to languages, regular expression & regular languages
09-05-2023	Finite state automata, grammars
09-06-2023	Finite state machines
09-09-2023	Godel numbers, Turing machines
	(Unit III)
09-12-2023	Chapter VII: Definitions and elementary results
13/9/23	Adjacency matrix, path matrix
16/9/23	Representing relations using diagraphs
19/9/23	Warshall's algorithm-shortest path
20/9/23	Linked representation of graph
23/9/23	Operations on graph with algorithms- searching in graph
26/9/23	Insertion in a graph, Deleting from a graph
27/9/23	Traversing a graph BFS & DFS algorithm
30/9/23	Chapter VIII: Ordered rooted tree, Binary trees
10-03-2023	Complete and extended binary trees
10-04-2023	Representing Binary trees in a memory
10-07-2023	Traversing binary trees
10-10-2023	Binary search tree
10-11-2023	Algorithms for searching & inserting in binary search trees
14/10/23	Algorithms for deleting in a binary search tree

**F.Y.B.SC Computer Science Sem I
Descriptive Statistics & Introduction To Probability (USCS106)**

Date	Syllabus topic
07-04-2023	(Unit I)
	Chapter I: Data types, attribute, variable
07-05-2023	Discrete and continuous variable
07-08-2023	Chapter II: Data presentation
07-11-2023	Frequency distribution, histogram o give
07-12-2023	Stem and Leaf display data aggregation
15/7/23	Chapter III: Measures of central tendency
18/7/23	Mean , Median ,Mode for raw data
19/7/23	Discrete , Grouped frequency distribution
22/7/23	Chapter IV: Measures dispersion
25/7/23	Variance
26/7/23	Standard deviation
29/7/23	Coefficient of variation for raw data
08-01-2023	Discrete and grouped frequency distribution
08-02-2023	Quartiles
08-05-2023	Quantiles real life example
08-08-2023	(Unit II)
	Chapter V: Moments
08-09-2023	Raw moments, Central moments
08-12-2023	Relation between raw and central moments
15/8/23	Chapter VI: Measures of Skewness and Kurtosis
16/8/23	Based on moments
19/8/23	Quartiles
22/8/23	Relation between mean , median ,mode for symmetric, asymmetric curve

23/8/23	Chapter VII: Correlation and Regression
26/8/23	Bivariate data
29/8/23	Scatter plot
30/8/23	Correlation, nonsense correlation
09-02-2023	Karl pearson's coefficients of correlation, independence
09-05-2023	Chapter VIII: Linear Regression
09-06-2023	Fitting of linear regression using least square regression
09-09-2023	Coefficient of determination, properties of regression coefficients.
09-12-2023	(Unit III)
	Chapter IX: Probability
13/9/23	Random experiment
16/9/23	Sample space
19/9/23	Introduction to events
20/9/23	Event types
23/9/23	Operation of events
26/9/23	Chapter X: Probability definition
27/9/23	Introduction to probability
30/9/23	Classical
10-03-2023	Axiomatic
10-04-2023	Elementary theorems of probability
10-07-2023	Conditional probability
10-10-2023	Bayes theorem
10-11-2023	Independence
14/10/23	Examples on probability

**F.Y.B.SC Computer Science Sem I
Soft Skill**

Date	Syllabus
07-03-2023	Syllabus discussion
07-04-2023	UNIT I: Introduction to Soft Skills and Hard Skills Personality Development: Knowing Yourself
07-05-2023	Positive Thinking , Johari's Window
07-10-2023	Communication Skills , Non-verbal Communication
07-11-2023	Physical Fitness, Emotional Intelligence: Meaning and Definition ,Need for Emotional Intelligence.
07-12-2023	Intelligence Quotient versus Emotional Intelligence Quotient
17/7/2023	Components of Emotional Intelligence
18/7/2023	Competencies of Emotional Intelligence and Skills to Develop Emotional Intelligence
19/7/2023	Etiquette and Mannerism: Introduction and Professional Etiquette, Technology Etiquette
24/7/2023	Communication Today: Significance of Communication, GSC's 3M Model of Communication, Vitality of the Communication Process, Virtues of Listening
25/7/2023	Fundamentals of Good Listening, Nature of Non-Verbal Communication
26/7/2023	Need for Intercultural and Communication, Communicating Digital World
31/7/2023	UNIT II: Academic Skills Employment Communication: Introduction
08-01-2023	Resume or Curriculum Vitae
08-02-2023	Scannable Resume and Developing an Impressive Resume
08-07-2023	Formats of Resume
08-08-2023	Job Application or Cover Letter

08-09-2023	Professional Presentation: Nature of Oral Presentation, Planning a Presentation
14/8/2023	Preparing the Presentation, Delivering the Presentation
	Job Interviews: Introduction, Importance of Resume and Definition of Interview
21/8/2023	Changes in the Interview Process, FAQ During Interviews
22/8/2023	Group Discussion: Introduction
23/8/2023	Ambience/Seating Arrangement for Group Discussion
28/8/2023	Importance of Group Discussions
09-04-2023	Difference between Group Discussion, Panel Discussion and Debate
09-05-2023	Traits, Types of Group Discussions, topic based and Case based Group Discussion
09-05-2023	Individual Traitsmachine instructions: arithmetic, logic, shift, etc. Instruction sets, RISC and CISC examples.
09-10-2023	Professional Skills Creativity at Workplace: Introduction and Current Workplaces
09-10-2023	UNIT III: Creativity, Motivation, Nurturing Hobbies at Work,
09-11-2023	The Six Thinking Hat Method
09-11-2023	Ethical Values: Ethics and Society, Theories of Ethics
09-12-2023	Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, problems in the absence of work ethics.
09-12-2023	Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity building
25/9/2023	Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity building
25/9/2023	Leadership and Team Building: Leader and Leadership, Leadership Traits
26/9/2023	Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams,
26/9/2023	Steps for Decision Making
27/9/2023	Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major
27/9/2023	Negotiation Concepts

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**S.Y.B.SC Computer Science Sem III
Data Structure**

Date	Syllabus topic(theory)
16-06-2023	Unit I : Chapter 1 : Abstract Data Type: Different Data Types
17-06-2023	different types of data structures & their classifications, Introduction to ADT
19-06-2022	Creating user-specific ADT
21-06-2023	Chapter 2 Linked Structures: ADT for linked list, Advantages & Disadvantages
22-06-2023	Singly Linked List-Traversing, Searching, Prepending and Removing Nodes
26-06-2023	applications of linked list like polynomial equation
28/06/2022	Chapter 3 Stacks: Stack ADT for Stack, Advantages & Disadvantages
03-07-2023	Applications of stack like balanced delimiter, prefix to postfix notation
05-07-2023	Queues: Queue ADT, Advantages & Disadvantages

06-07-2023	linked representations. Circular Queue operations
10-07-2023	Dequeues, applications of queue like job scheduling queues
12-07-2023	Unit I : Chapter 1 :Doubly Linked list: ADT of doubly linked list, Advantages & Disadvantages,
13-07-2023	Insertion and deletion of nodes at various positions
17-07-2023	Chapter 2 Trees: ADT for Tree Structure. Advantages & disadvantages
19-07-2023	Binary Tree- Properties, Implementation and Traversals
20-07-2023	Binary Search Tree, Balanced BST, Threaded Binary Trees, AVL Trees
24-07-2023	Applications of Tree like Huffman Coding,
26-07-2023	Chapter 3 Priority Queues & Heaps: Priority Queue, Priority Queue ADT, Advantages and Disadvantages,
27-07-2023	Applications, Heaps, types of heaps
31-07-2023	Heapifying the element
02-08-2023	Unit I : Chapter 1 Graph: Introduction, Graph ADT, Advantages and Disadvantages
03-08-2023	Graph Representation using adjacency matrix and adjacency list,
07-08-2023	Graph operations like insertion and deletion of nodes
09-08-2023	Graph Traversals using BFS & DFS,
10-08-2023	Applications of Graphs like shortest path algorithms
14-08-2023	Chapter 2 Hashing: Hash Table ADT, Advantages & Disadvantages
16-08-2023	Concept of hashing,
17-08-2023	hash table
21-08-2023	hash functions, collision
23-08-2023	collision avoidance techniques
24-08-2023	Applications of hashing

**S.Y.B.SC Computer Science Sem III
Linear Algebra Using Python**

Date	Syllabus topic
17-06-2023	(Unit I) Chapter I: Field
19-06-2023	Introduction to complex numbers
20-06-2023	Complex numbers in python
24-06-2023	Abstracting over fields
26-06-2023	Playing with GF2
27-06-2023	Chapter II: Vectors as a function, Vector addition
03-07-2023	Scalar-Vector multiplication
04-07-2023	Combining vector addition and scalar multiplication
08-07-2023	Dictionary based representation of vectors
10-07-2023	Dot product, Solving a triangular system of linear equations
11-07-2023	Support Vector machine- Introduction & Mechanism
15-07-2023	Chapter III: The Vector Space
17-07-2023	Linear combination, Span
18-07-2023	The geometry of sets of vectors, Vector spaces
22-07-2023	Linear systems homogenous and otherwise
24-07-2023	(Unit II) Chapter I: Matrix: Matrices as vectors, Column space and row space
25-07-2023	Matrix-vector and vector-matrix multiplication in terms of linear combinations
29-07-2023	Matrix vector multiplication in terms of dot-products, Null space
31-07-2023	Computing sparse matrix-vector product, Linear functions
01-08-2023	Matrix-matrix multiplication, Inner product and outer product
05-08-2023	From function inverse to matrix inverse

07-08-2023	Chapter II: Basis: Coordinate systems, two greedy algorithms for finding a set of generators,
08-08-2023	Linear dependence, Basis
12-08-2023	Unique representation, Change of basis
14-08-2023	first look, Computational problems involving finding a basis
19-08-2023	Chapter III: Dimension: Dimension and rank, Direct sum
21-08-2023	Dimension and linear functions, The annihilator
22-08-2023	Chapter IV:Gaussian elimination: Echelon form
26-08-2023	Gaussian elimination over GF(2)
28-08-2023	Solving a matrix-vector equation using Gaussian elimination.
29-08-2023	(Unit III) Chapter I: Inner Product: The inner product for vectors over the reals, Orthogonality
02-09-2023	Chapter II: Orthogonalization: Projection orthogonal to multiple vectors
04-09-2023	projecting orthogonal to mutually orthogonal vectors
05-09-2023	Building an orthogonal set of generators, orthogonal complement.
09-09-2023	Chapter III: Eigenvalues and Eigenvectors: Characteristic Polynomials of degree 2 and 3
11-09-2023	Eigenvalues and eigenvectors, Properties of eigenvalues and eigenvectors
12-09-2023	Cayley–Hamilton Theorem, Minimal Polynomial. Coordinate representation in terms of eigenvectors
16-09-2023	The Internet worm, Markov Chains, Google Page Rank algorithm.

S.Y.B.SC Computer Science Sem III
Principles of Operating Systems

Date	Syllabus topic
17-06-2023	(Unit I) Chapter I: Introduction to Operating-Systems: Definition of Operating System
20-06-2023	Operating System's role, Operating-System Operations
22-06-2023	Functions of Operating System, Computing Environments
24-06-2023	Chapter II: Operating-System Structures: Operating-System Services, User and Operating-System Interface
27-06-2023	System Calls, Types of System Calls
04-07-2023	Operating-System Structure
06-07-2023	Chapter III: Processes: Process Concept, Process Scheduling
08-07-2023	Operations on Processes, Inter process Communication
11-07-2023	Chapter IV: Threads: Overview, Multicore Programming, Multithreading Models
13-07-2023	(Unit II) Chapter I: Process Synchronization: General structure of a typical process, race condition
15-07-2023	The Critical-Section Problem, Peterson's Solution,
18-07-2023	Synchronization Hardware, Mutex Locks, Semaphores,
20-07-2023	Classic Problems of Synchronization, Monitors
22-07-2023	Chapter II: CPU Scheduling: Basic Concepts, Scheduling Criteria,
25-07-2023	Scheduling Algorithms (FCFS, SJF,
27-07-2023	SRTF, Priority, RR,
29-07-2023	Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling
01-08-2023	Chapter III: Deadlocks: System Model, Deadlock Characterization
03-08-2023	Methods for Handling Deadlocks
05-08-2023	Deadlock Prevention,Deadlock Avoidance
08-08-2023	Deadlock Detection, Recovery from Deadlock

10-08-2023	(Unit III) Chapter I: Main Memory: Background, Logical address space, Physical address space, MMU
12-08-2023	Swapping, Contiguous Memory Allocation
17-08-2023	Segmentation, Paging, Structure of the Page Table
19-08-2023	Chapter II: Virtual Memory: Background, Demand Paging,
22-08-2023	Copy-on-Write,Page Replacement
24-08-2023	Allocation of Frames, Thrashing
26-08-2023	Chapter III: Mass-Storage Structure: Overview, Disk Structure
29-08-2023	Disk Scheduling, Disk Management
31-08-2023	Chapter IV: File-System Interface: File Concept, Access Methods,
02-09-2023	Directory and Disk Structure, File-System Mounting, File Sharing
05-09-2023	Chapter IV: File-System Implementation: File-System Structure, File-System Implementation
09-09-2023	Directory Implementation, Allocation Methods
12-09-2023	Free-Space Management

**S.Y.B.SC Computer Science Sem III
Advance Java**

Date	Syllabus topic
17/06/23	Recaptulation
20/06/23	Introduction to information and network Security
21-06-2023	introduction of security attacks
24-06-2023	Introduction: Security Trends
27-06-2023	The OSI Security Architecture,
28-06-2023	Security Attacks,
07-01-2023	Security Services,
07-04-2023	Security Mechanisms Classical Encryption Techniques: Symmetric Cipher
07-05-2023	Model,
07-08-2023	Substitution Techniques
07-11-2023	Transposition Techniques
07-12-2023	Steganography, Block Cipher Principles,
15-07-2023	The Data Encryption Standard,
18-07-2023	The Strength of DES,
19-07-2023	AES (round details not expected), Multiple Encryption and Triple DES,
22-07-2023	Block Cipher Modes of Operation,
25-07-2023	Stream Ciphers Public-Key Cryptography
26-07-2023	RSA: Principles of Public-Key Cryptosystems,
29-07-2023	The RSA Algorithm
08-01-2023	Key Management,
08-02-2023	Diffie-Hellman Key Exchange Message Authentication and Hash Functions:
08-05-2023	Authentication Requirements,
08-08-2023	Authentication Functions,
08-09-2023	Message Authentication Codes,
08-12-2023	Hash Functions, Security of Hash Functions and Macs,
08-09-2022	Secure Hash Algorithm, HMAC
15-08-2023	Digital Signatures and Authentication:
16-08-2023	Digital Signatures,
19-08-2023	Authentication Protocols and Digital Signature Standard
22-08-2023	Authentication Applications:
23-08-2023	Kerberos
26-08-2023	Public-Key Infrastructure

29-08-2023	Electronic Mail Security: Pretty Good Privacy,
30-08-2023	S/MIME IP Security: Overview,
09-02-2023	Architecture,
09-05-2023	Authentication Header, Encapsulating Security Payload,
09-06-2023	Combining Security Associations,
09-09-2023	Key Management Web Security: Web Security Considerations,
09-12-2023	Secure Socket Layer and Transport Layer Security
13-09-2023	Secure Electronic Transaction, Intrusion: Intruders,
16-09-2023	Intrusion Techniques,Intrusion Detection Malicious Software
19-09-2023	Viruses and Related Threats,

**S.Y.B.SC Computer Science Sem III
Advance Database Concept**

Date	Syllabus topic
21/06/23	Over veiw of PL/SQL,Advantage
23-06-2023	Fundamentals ofPL/SQL,Architecture,Character set
24-06-2023	Lexical Unit ,Declaration,Reference to identifiers
28-06-2023	Scope and visibility,Assining values to vaiable,expression
30-06-2023	Data-Type,Ctrol statement,Condition selection,LOOP statement
01-07-2023	Squential control ,GOTO and NULL statement
07-05-2023	Sequence,Creating squence,referring,Altering,Dropping Squence
07-07-2023	Stroded Procedure and Function,Types and Creating Stored Procedure
08-07-2023	Exicting,Altering,Veiwing Stored Procedure,Function Calling and recursion function
11-07-2023	Collection and Records,Associative Arrays,Varrays
14-07-2023	Nested Tables,Collection Constructor,Assining values to collection variables
15-07-2023	Multidiamention Collection,Collection Compresion,Collection Methods
19-07-2023	Collection Types Defined in pakage specification,Record variable
21-07-2023	Assigning Values to Record Variables,Error Handindling,Compile-Time Warning
22-07-2023	Over veiw of Exception handling,Internally Defined Exception,Predefine Exception
26-07-2023	User-Defined Exception,Redclared predefined Exception
28-07-2023	Raising Exception Explicity,Exception propagation,Unhandled Exception
29-07-2023	Cursor,overveiw,Types,Invalid Cursor Exception
02-08-2023	Static nad Dynamic SQL,Static SQL,Decriptive of static SQL
08-04-2023	Cursor overveiw,Processing Query Result Sets,Cursor Variables
05-08-2023	CURSOR Expression, Transaction Processing and Control
09-08-2023	Autonomus Transaction,Dynamic SQL:Native Dynamic SQL,DBMS_SQL Package,SQL injection
11-08-2023	Triggers, Overveiw of Triggers,implementing triggers-Creating triggers
12-08-2023	Insert,delete,andUpdate triggers,nested triggers
16-08-2023	Viewing,deleting,and mordifing triggers
18-08-2023	and enforcing data integrity through triggers
19-08-2023	Packages,Overview of pakages,needs of pakages,pakage specification
23-08-2023	pakage Body,Pakage Instantiation and Initialization
25-08-2023	Transaction Management,ACID Properties,Serializability
26-08-2023	Two-phase commit protocol, Concurrency control,Lock Management
30-08-2023	Lost update problemInconistance
01-09-2023	Inconsistent Read Problem

02-09-2023	Read-write Locks,DeadLOcks Handling
09-06-2023	Two-phase Locking Protocol
08-09-2023	Crash Recovery-ARIES algorithm
09-09-2023	The log-based recovery,recovery related structure like teansaction and dirty pagev table
13-09-2023	write-ahead log protocol
15-09-2023	check point,recovery from syatem crash
16-09-2023	Redo and Undo Phases

S.Y.B.SC Computer Science Sem III
Web technologies

Date	Syllabus topic
16-06-2023	Recaptulation
17-06-2023	Recaptulation
19-06-2022	Chapter no. 1: HTML5: Fundamental Elements of HTML,
21-06-2023	Formatting Text in HTML
22-06-2023	Links and URLs in HTML, Tables in HTML,Images on a Web Page
26-06-2023	Colors, FORMs in HTML, Interactive Elements, Image Formats, Image Maps
28/06/2022	Working with Multimedia - Audio and Video File Formats,HTML elements for inserting Audio / Video on a web page
03-07-2023	Chapter no. 2: CSS: Understanding the Syntax of CSS
05-07-2023	CSS Selectors, Inserting CSS in an HTML Document
06-07-2023	CSS properties to work with background of a Page, CSS properties to work with Fonts and Text Styles
10-07-2023	CSS properties for positioning an element.
12-07-2023	Unit 2:Chapter no. 1: JavaScript: Using JavaScript in an HTML Document
13-07-2023	Programing Fundamentals of JavaScript – Variables, Operators, Control Flow Statements, Popup Boxes
17-07-2023	Functions – Defining and Invoking a Function,
19-07-2023	Defining Function arguments, defining a return Statement,
20-07-2023	Calling Functions with Timer
24-07-2023	JavaScript Objects - String, RegExp, Math, Date
26-07-2023	Browser Objects - Window, Navigator, History,
27-07-2023	Location, Document
31-07-2023	Cookies, Document Object Model
02-08-2023	Form Validation using JavaScript
03-08-2023	Chapter no. 2 :XML: Comparing XML with HTML
07-08-2023	Advantages and Disadvantages of XML
09-08-2023	Structure of an XML Document,
10-08-2023	XML Entity Referencecasts,DTD
14-08-2023	xsl:template, xsl:apply-templates
16-08-2023	xsl:import, xsl:call-template, xsl:include, xsl:element,
17-08-2023	xsl:attribute, xsl:attribute-set, xsl:value-of
21-08-2023	Unit 3: Chapter No.1: AJAX: AJAX Web Application Model
23-08-2023	How AJAX Works
24-08-2023	XMLHttpRequest Object – Properties and Methods
28-08-2023	handling asynchronous requests using AJAX
30-08-2023	Chapter No.2: PHP: Variables and Operators,
31-08-2023	Program Flow, Arrays, working with Files and Directories
04-09-2023	working with Databases

06-09-2023	Working with Cookies
07-09-2023	Sessions and Headers
11-09-2023	Chapter No.3: Introduction to jQuery
13-09-2023	Fundamentals
14-09-2023	Selectors
18-09-2023	methods to access HTML attributes
20-09-2023	methods for traversing
21-09-2023	manipulators
25-09-2023	events
27-09-2023	effects

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T.Y.B.SC Computer Science Sem V
Game Programming

Date	Syllabus topic
16-06-2023	UNIT I : Introduction and syllabus discussion
21-06-2023	Chapter 1: Introduction to Vectors: Vectors: Vector Manipulation, multiplying a Vector by a Scalar,
22-06-2023	Vector Addition and Subtraction, Position Vectors, Unit Vectors
24-06-2023	Cartesian Vectors, Vector Multiplication, Scalar Product
01-07-2023	Example of the Dot Product, The Dot Product in Lighting Calculations
05-07-2023	The Dot Product in Back-Face Detection, The Vector Product
06-07-2023	deriving a Unit Normal Vector for a Triangle Areas, Calculating 2D Areas
08-07-2023	Chapter 2: Transformations: 2D Transformations, Matrices,
12-07-2023	Homogeneous Coordinates, 3D Transformations
13-07-2023	Change of Axes, Direction Cosines
15-07-2023	rotating a Point about an Arbitrary Axis, Transforming Vectors,
19-07-2023	Determinants, Perspective Projection, Interpolation
20-07-2023	Chapter : 3D Graphics for Game Programming: 3D Transformations, Quaternions
22-07-2023	3D Modeling and Rendering, Ray Tracing
26-07-2023	Shader Models, Lighting
27-07-2023	Color, Texturing, Camera and Projections
29-07-2023	Culling and Clipping, Character Animation
02-08-2023	Physics-based Simulation, Scene Graphs.
03-08-2023	UNIT II: Chapter 1: Game Engines and Design: Game engine architecture, Engine support systems
05-08-2023	Resources and File systems, Game loop and real-time simulation
09-08-2023	Human Interface devices, Collision and rigid body dynamics
10-08-2023	profiling. Introduction to Dx Studio, Introduction to Unity, Application layer,
12-08-2023	Game logic, Game views, managing memory, controlling the main loop,
17-08-2023	loading and caching game data, User Interface management, Game event management.
19-08-2023	Chapter 2: Introduction To DirectX 11: COM, Textures and Resources Formats,
23-08-2023	The swap chain and Page flipping, Depth Buffering
24-08-2023	Texture Resource Views, Multisampling Theory and MS in Direct3D, Feature Levels

26-08-2023	Chapter 3: Game Platform and Development: 2D and 3D Game development using Python-Pygame
30-08-2023	ModernGL, Numpy, PyGLM,Ursina (OpenGL)
31-08-2023	UNIT III:Chapter 1: Unity Development Environment: IDE Basics, Unity Concepts, Sprites
02-09-2023	Game Loops and Functions, Game Design Strategies.
06-09-2023	Chapter 2: Simple Movement, Operations and Object Oriented Concepts: Simple Rotation and Scaling, Rigidbody Components
07-09-2023	Unity Colliders, Physics Materials, Scripting Collision Events,
09-09-2023	Primitive Data and Math, Decisions and Flow Control, Loops and Arrays
13-09-2023	Game Design Strategies, Exceptions and Debugging,
14-09-2023	Defining Classes,Functions
16-09-2023	Organizing and Managing ,Game Objects
20-09-2023	Chapter 3: Advanced Programming: Virtual Worlds, Scrolling Games, Animation,
21-09-2023	Sound Effects, Advanced Game Physics, Multiple Scenes, Artificial
23-09-2023	Intelligence, User Interfaces, Game Art, Publishing Games.

**T.Y.B.SC Computer Science Sem V
Artificial Intelligence**

Date	Syllabus topic
20-06-2023	History
24-06-2023	state art of AI
26-06-2023	chap 2: Intelligent Agents: Agents and Environments
07-01-2023	Nature of Environments,
07-03-2023	Structure of Agents.
07-04-2023	chap 3 : Problem Solving by searching: Problem-Solving Agents
07-08-2023	Uninformed Search Strategies,
07-10-2023	Informed (Heuristic) Search Strategies
07-11-2023	unit II chap 1 : Knowledge Representation and Reasoning: Knowledge Representation
15-07-2023	different forms,
17-07-2023	Reasoning, Planning
18-07-2023	Uncertainty in Knowledge Fuzzy Logic & Fuzzification
22-07-2023	Parametric & Non-Parametric Models,
24-07-2023	Classification, Regression
25-07-2023	Regularization,
29-07-2023	Decision Trees,
31-07-2023	SVM, Artificial Neural Networks
08-01-2023	Ensemble Learning,
08-05-2023	Boosting, K-NN, Gradient Descent
08-07-2023	unit III chap 1 : Probabilistic models: Statistical Learning,
08-08-2023	Learning with Complete Data, Naive Bayes
08-12-2023	Learning with Hidden Variables: The EM Algorithm
14-08-2023	chap 2 : Unsupervised Learning: Concept of Unsupervised learning
15-08-2023	Association Rule Mining
19-08-2023	chap 3 : Reinforcement learning: Concept of Reinforcement learning
21-08-2023	Q-Learning
22-08-2023	Hidden Markov Model

**T.Y.B.SC Computer Science Sem V
Information And Network Security**

Date	Syllabus topic
19-06-2023	Recaptulation
20-06-2023	Recaptulation
22-06-2023	Introduction to information and network Security
26-06-2023	introduction of security attacks
27-06-2023	Introduction: Security Trends
29-06-2023	The OSI Security Architecture,
07-03-2023	Security Attacks,
07-04-2023	Security Services,
06-07-2023	Security Mechanisms Classical Encryption Techniques: Symmetric Cipher Model,
10-07-2023	Substitution Techniques
11-07-2023	Transposition Techniques
13-07-2023	Steganography, Block Cipher Principles,
17-07-2023	The Data Encryption Standard,
18-07-2023	The Strength of DES,
20-07-2023	AES (round details not expected), Multiple Encryption and Triple DES,
24-07-2023	Block Cipher Modes of Operation,
25-07-2023	Stream Ciphers Public-Key Cryptography
27-07-2023	RSA: Principles of Public-Key Cryptosystems,
31-07-2023	The RSA Algorithm
08-01-2023	Key Management: Public-Key Cryptosystems,
03-08-2023	Key Management,
07-08-2023	Diffie-Hellman Key Exchange Message Authentication and Hash Functions: Authentication Requirements,
08-08-2023	Authentication Functions,
10-08-2023	Message Authentication Codes,
14-08-2023	Hash Functions, Security of Hash Functions and Macs,
15-08-2023	Secure Hash Algorithm, HMAC
17-08-2023	Digital Signatures and Authentication:
21-08-2023	Digital Signatures,
22-08-2023	Authentication Protocols and Digital Signature Standard
24-08-2023	Authentication Applications:
28-08-2023	Kerberos
29-08-2023	X.509 Authentication
31-08-2023	Public-Key Infrastructure
09-04-2023	Electronic Mail Security: Pretty Good Privacy,
05-09-2023	S/MIME IP Security: Overview,
07-09-2023	Architecture,
11-09-2023	Authentication Header, Encapsulating Security Payload,
12-09-2023	Combining Security Associations,
14-09-2023	Key Management Web Security: Web Security Considerations,
14-09-2023	Secure Socket Layer and Transport Layer Security
18-09-2023	Secure Electronic Transaction, Intrusion: Intruders,
19-09-2023	Intrusion Techniques, Intrusion Detection Malicious Software
21-09-2023	Viruses and Related Threats,
25-09-2023	Virus Countermeasures
26-09-2023	DDOS Firewalls: Firewall Design Principles, Types of Firewalls

T.Y.B.SC Computer Science Sem V
Software Testing & Quality Assurance

Date	Syllabus topic
	Unit I
19-06-2023	chap 1: Introduction to software testing
	Nature of errors
20-06-2023	the need for testing
24-06-2023	chap 2: Definition of Quality and Quality Assurance: Understanding quality in software development
	Distinction between Quality Assurance (QA)
26-06-2023	Quality Control (QC)
	Quality Management (QM), and Software Quality Assurance (SQA)
27-06-2023	chap 3: Software Development Life Cycle (SDLC): Overview of SDLC phases
	relationship to testing, Role of testing in each phase,
07-01-2023	Software quality factors and their impact on testing
07-03-2023	chap4 : Verification and Validation (V&V): Definition of V&V
07-04-2023	significance in software development
07-08-2023	Different types of V&V mechanisms
07-10-2023	Concepts of Software Reviews, Inspection, and Walkthrough
07-11-2023	Unit II
15-07-2023	Chap 1:Testing Fundamentals
17-07-2023	Basics of software testing process, Test case design principles and techniques
18-07-2023	Test execution, reporting, and documentation
22-07-2023	Chap 2 : White Box Testing and Black Box Testing: Functional/Specification Testing as Black Boxbased
24-07-2023	Black box: Equivalence Partitioning, Boundary Value Analysis, Decision Table Testing,
	State Transition Testing, Structural Testing as White Box, White Box: Statement testing, Branch testing.
25-07-2023	Experience-based: Error guessing, Exploratory testing, Checklist-based testing.
	chap 3 : Software Testing Strategies: Strategic approach to software testing Unit
29-07-2023	Testing: purpose, techniques, and best practices
31-07-2023	Integration Testing: approaches and challenges
08-01-2023	Validation Testing: ensuring adherence to user requirements, System Testing: comprehensive end-to-end testing
08-05-2023	chap 4 : Software Metrics : Concept of software metrics and their importance
08-07-2023	Developing and utilizing different types of metrics, Complexity metrics and their significance in testing
08-08-2023	Unit III
08-12-2023	chap 1: Defect Management: Definition of defects and their lifecycle
14-08-2023	Defect management process, including defect reporting and tracking,
15-08-2023	Metrics related to defects and their utilization for process improvement
19-08-2023	chap 2: Software Quality Assurance: Understanding quality concepts and the Quality Movement
21-08-2023	Background issues and challenges in SQA
22-08-2023	Activities and approaches in Software Quality Assurance,
26-08-2023	Software Reviews: Formal Technical Reviews and their benefits

28-08-2023	Statistical Quality Assurance and Software Reliability
29-08-2023	chap 3 : Statistical process control techniques for quality assurance: Software reliability measurement and improvement
09-02-2023	The ISO 9000 Quality Standards and their application in software development
09-04-2023	chap 4 : Quality Improvement Techniques: Introduction to quality improvement methodologies
09-05-2023	Utilizing quality costs for decision-making, Introduction to quality improvement tools
09-09-2023	Pareto Diagrams
09-11-2023	Cause-effect Diagrams, Scatter Diagrams, Run charts

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